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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,956	01/10/2005	Henrik Bisgaard-Frantzen	10288.204-US	2783

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NOVOZYMES NORTH AMERICA, INC.
500 FIFTH AVENUE
SUITE 1600
NEW YORK, NY 10110

EXAMINER

KIM, TAEYOON

ART UNIT	PAPER NUMBER
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1651

MAIL DATE	DELIVERY MODE
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05/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/520,956		BISGAARD-FRANTZEN ET AL.	
	Examiner		Art Unit	
	Taeyoon Kim		1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 50-69 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 50-69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 50-69 are pending.

Response to Amendment

Applicant's amendment and response filed on Mar. 9, 2007 has been received and entered into the case.

Claims 1-49 are canceled, claims 50-69 are pending and have been considered on the merits. All arguments have been fully considered.

Response to Arguments

Applicant's arguments with respect to claims 41-49 have been considered but are moot in view of the new ground(s) of rejection.

Notice to Comply with Requirements for Patent Applications Containing Nucleotide Sequence and/or Amino Acid Sequence Disclosures

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth below. **All sequences disclosed in the application must comply with the requirements of 37 C.F.R. 1.821-1.825, not only those recited in the claims.**

Sequence obtainable at Swissprot as Accession No. P06832 in p.10, line 30

SEQ ID NO:1 in p.11, line 1 (PA2001 01821)

SEQ ID NO:1 in p.11, lines 24-25 (PA2002 00130)

Amino acid sequence of Fig. 14 in WO 91/17244 in p.11, line 21

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SEQ ID NO:1 in p.12, line 34 (US 6162628)

SEQ ID NO:10 in p.12, line 7 (WO96/23874)

SEQ ID NO:4 in p.12, line 18 (WO99/19467)

SEQ ID NO:2 in p.14, line 6 (WO00/04136)

SEQ ID NO:1 in p.14, line 29 (WO1016340)

SEQ ID NO:2 in p.14, line 13 (PA2002 00005)

All such sequences are relevant for the purposes of building a comprehensive database and properly assessing prior art. It is therefore essential that all sequences, whether only disclosed or also claimed, be included in the database.

Claim Objections

Claim 55 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The term "endoglucanase" is another name for cellulase. Therefore, the current claim is no further limiting the parent claim.

Claim 69 is objected to because the term "trans-2-nonenal" in the claim is not consistently used in the specification ("trans-2-noneal", see p.4). Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 56 and 57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 56 and 57 disclose a sequence of SEQ ID NO:1. It is not clear whether this SEQ ID NO:1 is directed to the SEQ ID NO:1 submitted in the sequence listing, or SEQ ID NO:1 listed in the specification. Apparently, there are multiple SEQ ID NO:1 disclosed in the specification. It appears that SEQ ID NO:1 disclosed in the claims is a cellulase. However, whether the sequence listed in the claims is SEQ ID NO:1 in Danish patent application PA 2002 00130 or SEQ ID NO:1 in the sequence listing, or two SEQ IDs are the same.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 50-52, 55-57 and 61-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witt (US 4,788,066).

Claims 50-52, 55-57 and 61-69 are drawn to a method for production of beer forming a mash comprising 100% barley malt (no adjunct) with a cellulase (endoglucanase), at temperature at least 70°C initially and continuously, to extract at least 80% of mash to produce a wort, and separating the wort from the spent grains, fermenting the wort with a yeast and obtaining a beer (claims 50, 55-57); a limitation to the addition of a protease (claim 51), an alpha-amylase (claim 52) to the method of claim 50; a limitation to the fermented wort being combined with a fermented second wort (claim 61); a limitation to at least 10% the grist of the wort being barley malt (claim 62); a limitation to the initial incubation temperature being attained within 10 min (claim 63), 5 min (claim 64), at the mash forming (claim 65); a limitation to the temperature being at least 75°C (claim 66); a limitation to the beer being selected from the group listed in the claim 67; a limitation to the method/process of claim 50, wherein the concentration of dimethyl sulfide (claim 68) or trans-2-nonenal (claim 69) being less than the concentration of those produced by the standard Congress mashing process.

Witt teaches a method of producing low alcohol beer using barley malt (all-malt; 100% barley malt), alpha-amylase and cellulase at the temperature 78-80°C. Witt also teaches separation of wort after mashing process and fermentation with a yeast to produce a low alcohol beer (see abstract; column 2, lines 11-46).

Witt does not particularly teach that the initial incubation temperature being attaining within 15 min. of the step (a). However, since the method of Witt requires a mashing process at the temperature of 78-80°C using 100% barley malt without any intervening steps, it is obvious that the incubation step is carried out immediately, if not within 15 min of forming a mash.

Although Witt does not teach that the extract recovery being at least 80%, it would have been obvious for the person of ordinary skill in the art at the time the invention was made to optimize the extract recovery of wort after a mashing process. The selection of recovery rate at least 80% would have been a routine matter of optimization on the part of the artisan of ordinary skill, said artisan recognizing that it is economical to obtain higher percentage of soluble extracts (wort) from a mash in the process of beer production. A holding of obviousness over the cited claims is therefore clearly required. The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages. See *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382.; See also M.P.E.P. § 2144.05.

Although Witt does not teach the limitation of combining the fermented wort with fermented second wort in claim 61, it would have been obvious for a person of ordinary skill in the art because the combining step of two batches of wort would be recognized as a mere scaling-up procedure.

M.P.E.P. §2144.04 states "In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (Claims directed to a lumber package "of appreciable size and weight requiring

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handling by a lift truck” where held unpatentable over prior art lumber packages which could be lifted by hand because limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) (“mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled.” 531 F.2d at 1053, 189 USPQ at 148.).

Although Witt does not particularly teach the concentrations of dimethyl sulfide and trans-2-nonenal of the wort of beer produced by the method of Witt being reduced compared to those produced by the standard Congress mashing process, since the method of Witt is considered as the same, the outcome of the method of Witt would be the same as the current invention. Particularly, as the specification discloses, the reduction of dimethyl sulfide in the beer or the wort produced by the current invention is due to the higher temperature of incubation. Since Witt teaches higher temperature of incubation (about 75°C), the reduction of dimethyl sulfide would be expected in the beer or the wort produced by the method of Witt. Furthermore, the current claims contain whereby/wherein clauses. Claims 68 and 69 contain a “wherein” clause that merely states the result of the limitations in the claim and therefore, adds nothing to the patentability or substance of the claim. Therefore, this phrase does not limit the claim. See *Texas Instruments Inc. v. International Trade Commission*, 26 USPQ2d 1010 (Fed. Cir. 1993); *Griffin v. Bertina*, 62 USPQ2d 1431 (Fed. Cir. 2002); *Amazon.com Inc. v. Barnesandnoble.com Inc.*, 57 USPQ2d 1747 (Fed. Cir. 2001).

In the response to the claim rejection based on Witt in the previous office action, applicant argued that Witt does not teach the presence of the adjunct along with the barley malt. However, since the claim has been written as the mash containing 100% barley malt, which is considered as no additional adjunct added. Thus, the teaching of Witt would render the currently claimed invention obvious. Furthermore, Therefore, it would be obvious for a person of ordinary skill in the art to use the adjunct in the process of Witt by using less than 100% barley malt because using the barley malt along with the adjunct is well known in the art. It is notoriously old and well known in the art that the addition of adjunct such as rice or corn malt along with barley malt to produce a mash in beer production.

Therefore, the invention as a whole would have been prima facie obvious to a person of ordinary skill at the time the invention was made.

Claims 50-59 and 61-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owades (US 4,622,224) in view of Hjortshoj et al. (US 4,110,163).

Claims 50-59 and 61-69 are drawn to Claims 50-52, 55-57 and 61-69 are drawn to a method for production of beer forming a mash comprising 5% or more barley malt and an adjunct) with a cellulase (endoglucanase), at temperature at least 70°C initially and continuously, to extract at least 80% of mash to produce a wort, and separating the wort from the spent grains, fermenting the wort with a yeast and obtaining a beer (claims 50, 55-57); a limitation to the addition of a protease (claim 51), an alpha-amylase (claim 52) to the method of claim 50; a limitation to the addition of a maltose

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generating enzyme to the method (claim 53); a limitation to the maltose generating enzyme being beta-amylase (claim 54); a limitation to the adjunct being unmalted barley, other malted or unmalted grain (claim 58); a limitation to the adjunct being rice or corn (claim 59); a limitation to the fermented wort being combined with a fermented second wort (claim 61); a limitation to at least 10% the grist of the wort being barley malt (claim 62); a limitation to the initial incubation temperature being attained within 10 min (claim 63), 5 min (claim 64), at the mash forming (claim 65); a limitation to the temperature being at least 75°C (claim 66); a limitation to the beer being selected from the group listed in the claim 67; a limitation to the method/process of claim 50, wherein the concentration of dimethyl sulfide (claim 68) or trans-2-nonenal (claim 69) being less than the concentration of those produced by the standard Congress mashing process.

Owades teaches a method for producing wort by producing a mash comprising 10% barley malt and 90% cereal adjuncts (e.g. corn grits), and the temperature of the mash being at above 75°C (see Example 1 and claim 1). Owades teaches the use of alpha and beta amylase (see column 1, lines 22-23).

Owades does not teach the use of cellulase in the method.

Hjortshoj et al. teach the use of beta-glucanase (cellulase or endoglucanase) (see whole document).

It would therefore have been obvious for the person of ordinary skill in the art at the time the invention was made to use beta-glucanase of Hjortshoj et al. in the method of Owades.

The skilled artisan would have been motivated to make such a modification because beta-glucanase of Hjortshoj et al. is used for reduces the viscosity of the wort caused by the use of a common carbohydrate adjunct, resulting in an increase in time required for filtration of the mash and the beer (see column 1, lines 16-19).

Although Owades in view of Hjortshoj et al. do not teach that the extract recovery being at least 80%, it would have been obvious for the person of ordinary skill in the art at the time the invention was made to optimize the extract recovery of wort after a mashing process. The selection of recovery rate at least 80% would have been a routine matter of optimization on the part of the artisan of ordinary skill, said artisan recognizing that it is economical to obtain higher percentage of soluble extracts (wort) from a mash in the process of beer production. A holding of obviousness over the cited claims is therefore clearly required. The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages. See *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382.; See also M.P.E.P. § 2144.05.

Although Owades in view of Hjortshoj et al. do not teach the limitation of combining the fermented wort with fermented second wort in claim 61, it would have been obvious for a person of ordinary skill in the art because the combining step of two batches of wort would be recognized as a mere scaling-up procedure.

M.P.E.P. §2144.04 states "In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (Claims directed to a lumber package "of appreciable size and weight requiring

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handling by a lift truck" where held unpatentable over prior art lumber packages which could be lifted by hand because limitations relating to the size of the package were not sufficient to patentably distinguish over the prior art.); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) ("mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled." 531 F.2d at 1053, 189 USPQ at 148.).

Although Owades in view of Hjortshoj et al. do not particularly teach the concentrations of dimethyl sulfide and trans-2-nonenal of the wort of beer produced by the method of Owades in view of Hjortshoj et al. being reduced compared to those produced by the standard Congress mashing process, since the method of Owades in view of Hjortshoj et al. is considered as the same as the current invention, the outcome of the method of Owades in view of Hjortshoj et al. would be the same as the current invention. Particularly, as the specification discloses, the reduction of dimethyl sulfide in the beer or the wort produced by the current invention is due to the higher temperature of incubation. Since Owades in view of Hjortshoj et al. teach higher temperature of incubation (about 75°C), the reduction of dimethyl sulfide would be expected in the beer or the wort produced by the method of Owades in view of Hjortshoj et al. Furthermore, the current claims contain whereby/wherein clauses. Claims 68 and 69 contain a "wherein" clause that merely states the result of the limitations in the claim and therefore, adds nothing to the patentability or substance of the claim. Therefore, this phrase does not limit the claim. See *Texas Instruments Inc. v. International Trade Commission*, 26 USPQ2d 1010 (Fed. Cir. 1993); *Griffin v. Bertina*, 62 USPQ2d 1431

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(Fed. Cir. 2002); *Amazon.com Inc. v. Barnesandnoble.com Inc.*, 57 USPQ2d 1747 (Fed. Cir. 2001).

Therefore, the invention as a whole would have been prima facie obvious to a person of ordinary skill at the time the invention was made.

Claim 60 is rejected under 35 U.S.C. 103(a) as being unpatentable over Owades (supra) in view of Hjortshoj et al. (supra), in further view of Stubits et al. (US 4,397,872).

Claim 60 is drawn to a limitation to the adjunct having a gelatinization temperature at or below the initial incubation temperature.

Owades in view of Hjortshoj et al. teach the limitations of claim 50 (see above).

Owades in view of Hjortshoj et al. do not teach the adjunct having a gelatinization temperature at or below the initial incubation temperature of at least 70°C.

Stubits et al. teach the use of rice adjuncts with a low gel point (gelatinization), which does not exceed 70°C (see column 2, lines 25-29).

It would therefore have been obvious for the person of ordinary skill in the art at the time the invention was made to use the rice adjuncts of Stubits et al. in the method of Owades in view of Hjortshoj et al.

The skilled artisan would have been motivated to make such a modification because Stubits et al. teach that the low gel point rice adjuncts prevent excessive viscosity build-up when incubating the mash in high temperature (e.g. above 75°C) of the method taught by Owades in view of Hjortshoj et al. (see Abstract).

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Furthermore, the use of low gel point rice adjuncts would be considered as the same method step as adding cellulase for the purpose of reducing the viscosity of the wort. It is well established that duplicating components with similar functions within a composition is obvious; see *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) and M.P.E.P. § 2144.04.

Therefore, the invention as a whole would have been prima facie obvious to a person of ordinary skill at the time the invention was made.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

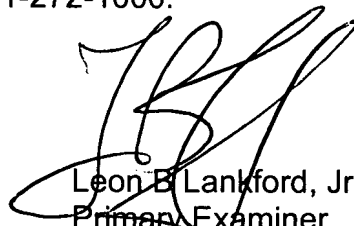
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taeyoon Kim whose telephone number is 571-272-9041. The examiner can normally be reached on 8:00 am - 4:30 pm ET (Mon-Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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